1   1.   A system for managing clock adjustment in a storage system,

2   comprising:

3   a clock configured to provide a current time, wherein the current time is used

4   to enforce a content retention period;

5   control logic configured to receive a proposed new time for the clock;

6   control logic configured to determine whether the proposed new time is

7   reasonable; and

8   control logic configured to adjust the current time of the clock to the proposed

9   new time if it is determined that the proposed new time is reasonable.

1   2.   The system of claim 1 further comprising:

2   control logic configured to prevent adjustment of the clock to the proposed

3   new time if it is determined that the proposed new time is unreasonable.

1   3.   The system of claim 1 wherein the control logic configured to

2   determine whether the proposed new time is reasonable further comprises:

3   control logic configured to determine whether the proposed new time falls

4   within a specific range;

5   wherein if the proposed new time falls within the specific range, the proposed

6   new time is determined to be reasonable.

1   4.   The system of claim 3 wherein the specific range is stored in a

2   memory.

1   5.   The system of claim 3 further comprising:

2   control logic configured to calculate the specific range.

1   6.   The system of claim 5 wherein the specific range is calculated using a

2   statistical method.

1   7.   The system of claim 3 wherein the control logic configured to

2   determine whether the proposed new time falls within the specific range further comprises:

3   control logic configured to calculate a first difference between the proposed

4   new time and the current time provided by the clock;

5   control logic configured to calculate a second difference between the current

6   time provided by the clock and a last adjustment time, the last adjustment time representing

7   the time which the clock was last adjusted;

8   control logic configured to select the specific range based on the second

9   difference; and

10   control logic configured to compare the first difference and the specific range;

11   wherein if the first difference is less than or equal to the specific range, the

12   proposed new time is determined to be reasonable.

1   8.   A storage system comprising:

2   a clock configured to provide a current time, wherein the current time is used

3   to enforce a content retention period;

4   a memory configured to store clock management information; and

5   a storage access program configured to:

6   receive a proposed new time for the clock;

7   determine whether the proposed new time is reasonable using the clock

8   management information; and

9   adjust the current time of the clock to the proposed new time if it is

10   determined that the proposed new time is reasonable.

1   9.   The storage system of claim 8 wherein the storage access program is

2   further configured to prevent adjustment of the clock to the proposed new time if it is

3   determined that the proposed new time is unreasonable.

1   10.   The storage system of claim 8 wherein the storage access program is

2   further configured to determine whether the proposed new time falls within a specific range;

3   and

4   wherein if the proposed new time falls within the specific range, the proposed

5   new time is determined to be reasonable.

1   11.   The storage system of claim 10 wherein the clock management

2   information includes a table having a plurality of maximum adjustable time ranges; and

3   wherein the specific range is selected from the plurality of maximum

4   adjustable time ranges.

1   12.   The storage system of claim 11 wherein the plurality of maximum

2   adjustable time ranges are calculated using a statistical method.

1   13.   The storage system of claim 11 wherein the clock management

2   information further includes a last adjustment time, the last adjustment time representing the

3   time that the clock was last adjusted; and

4   wherein the storage access program is further configured to determine whether

5   the proposed new time is reasonable using the last adjustment time, the current time and the

6   specific range.

1   14.   The storage system of claim 13 wherein the storage access program is

2   further configured to:

3   calculate a first difference between the proposed new time and the current

4   time;

5   calculate a second difference between the current time and the last adjustment

6   time; and

7   select the specific range from the plurality of maximum adjustable time ranges

8   based on the second difference; and

9   compare the first difference and the specific range to determine whether the

10   proposed new time is reasonable;

11   wherein if the first difference is less than or equal to the specific range, the

12   proposed new time is determined to be reasonable.

1   15.   The storage system of claim 10 wherein the storage access program is

2   further configured to calculate the specific range.

1   16.   A storage system comprising:

2   a clock configured to provide a current time, wherein the current time is used

3   to enforce a content retention period;

4   a memory configured to store clock management information, wherein the

5   clock management information includes a last adjustment time and a plurality of maximum

6   adjustable time ranges, wherein the last adjustment time represents the time which the clock

7   was last adjusted; and

8   a storage access program configured to:

9   receive a proposed new time for the clock;

10   determine whether the proposed new time is reasonable using the

11   current time, the last adjustment time and a specific range selected from the plurality of

12   maximum adjustable time ranges; and

13   adjust the current time of the clock to the proposed new time if it is

14   determined that the proposed new time is reasonable.

1   17.   The storage system of claim 16 wherein the storage access program is

2   further configured to prevent adjustment of the clock to the proposed new time if it is

3   determined that the proposed new time is unreasonable.

1   18.   The storage system of claim 16 wherein the storage access program is

2   further configured to:

3   calculate a first difference between the proposed new time and the

4   current time;

5   calculate a second difference between the current time and the last

6   adjustment time; and

7   select the specific range from the plurality of maximum adjustable time

8   ranges based on the second difference;

9   wherein if the first difference is less than or equal to the specific range, the

10   proposed new time is determined to be reasonable.

1   19.   The storage system of claim 16 wherein the plurality of maximum

2   adjustable time ranges are calculated using a statistical method.

1   20.   A method for managing clock adjustment in a storage system, the

2   storage system having a clock providing a current time for enforcing a content retention

3   period, comprising:

4   receiving a proposed new time for the clock;

5   determining whether the proposed new time is reasonable; and

6   adjusting the current time of the clock to the proposed new time if it is

7   determined that the proposed new time is reasonable.

1   21.   The method of claim 20 further comprising:

2   preventing adjustment of the clock to the proposed new time if it is determined

3   that the proposed new time is unreasonable.

1   22.   The method of claim 20 wherein determining whether the proposed

2 new time is reasonable further comprises:

3   determining whether the proposed new time falls within a specific range;

4   wherein if the proposed new time falls within the specific range, the proposed

5 new time is determined to be reasonable.

1   23.   The method of claim 22 further comprising:

2   calculating the specific range.

1   24.   The method of claim 23 wherein the specific range is calculated using

2 a statistical method.

1   25.   The method of claim 22 wherein determining whether the proposed

2 new time falls within the specific range further comprises:

3   calculating a first difference between the proposed new time and the current

4 time provided by the clock;

5   calculating a second difference between the current time provided by the clock

6 and a last adjustment time, the last adjustment time representing the time which the clock was

7 last adjusted;

8   selecting the specific range based on the second difference; and

9   comparing the first difference and the specific range;

10   wherein if the first difference is less than or equal to the specific range, the

11 proposed new time is determined to be reasonable.

1   26.   A method for managing clock adjustment in a storage system, the

2 storage system having a clock configured to provide a current time, wherein the current time

3 is used to enforce a content retention period, and a memory configured to store clock

4 management information, the method comprising:

5   receiving a proposed new time for the clock;

6   determining whether the proposed new time is reasonable using the clock

7 management information; and

8   adjusting the current time of the clock to the proposed new time if it is

9 determined that the proposed new time is reasonable.

1   27.   The method of claim 26 further comprising:

2   preventing adjustment of the clock to the proposed new time if it is determined

3   that the proposed new time is unreasonable.

1   28.   The method of claim 26 wherein determining whether the proposed

2   new time is reasonable includes:

3   determining whether the proposed new time falls within a specific range; and

4   wherein if the proposed new time falls within the specific range, the proposed

5   new time is determined to be reasonable.

1   29.   The method of claim 28 wherein the clock management information

2   includes a table having a plurality of maximum adjustable time ranges; and

3   wherein the specific range is selected from the plurality of maximum

4   adjustable time ranges.

1   30.   The method of claim 29 wherein the plurality of maximum adjustable

2   time ranges are calculated using a statistical method.

1   31.   The method of claim 29 wherein the clock management information

2   further includes a last adjustment time, the last adjustment time representing the time that the

3   clock was last adjusted; the method further comprising:

4   using the last adjustment time, the current time and the specific range to

5   determine whether the proposed new time is reasonable.

1   32.   The method of claim 31 further comprising:

2   calculating a first difference between the proposed new time and the current

3   time;

4   calculating a second difference between the current time and the last

5   adjustment time; and

6   selecting the specific range from the plurality of maximum adjustable time

7   ranges based on the second difference; and

8   comparing the first difference and the specific range to determine whether the

9   proposed new time is reasonable;

10   wherein if the first difference is less than or equal to the specific range, the

11   proposed new time is determined to be reasonable.

1   33.   A method for managing clock adjustment in a storage system, the

2 storage system having a clock providing a current time for enforcing a content retention

3 period, comprising:

4   receiving a proposed new time for the clock; and

5   adjusting the current time of the clock to the proposed new time if the

6 proposed new time falls within a specific range.

1   34.   The method of claim 33 further comprising:

2   preventing adjustment of the clock to the proposed new time if the proposed

3 new time does not fall within the specific range.